

To: KHanson@ldftribe.com[KHanson@ldftribe.com]; Egan, Robert[egan.robert@epa.gov]; Dee.allen@ldftribe.com[Dee.allen@ldftribe.com]; Kamke, Sherry[Kamke.Sherry@epa.gov]
Cc: Manville, Jennifer[manville.jennifer@epa.gov]
From: Greenwater, Anthony
Sent: Wed 4/12/2017 10:19:48 PM
Subject: proposed well locations, Haskell Lake
report, well specs 20170412.docx

All: Thank you for your efforts today in wrestling with a great deal of data to identify additional well locations at Haskell Lake Area Contamination Site. I suggest you now focus on the remaining points of uncertainty and/or disagreement. Plan to participate in next week's call (day and time TBD), bringing detailed arguments pro and con to reach a working consensus you can take to WDNR soon.

A brief summary of today's results is attached. As always, I am sending it only to the principals. Please do not forward to other parties without the clear consent of both the Tribe and the Agency. As always, if I have made any mistakes in describing your discussion and results, just let me know. Thanks again for the discussion today.

Vr,

Anthony Greenwater, Director

Tribal and International Affairs

US EPA, Region 5

77 W Jackson Blvd., Chicago Illinois 60604

office: 312 353 8640

mobile: 312 257 1551

From: Hanson, Kristen <KHanson@ldftribe.com>
Sent: Wednesday, April 12, 2017 11:05:05 AM
To: Egan, Robert; Bartz, Paul (Paul.Bartz@WestonSolutions.com); Mooney, Kathleen M.; Greenwater, Anthony; Manville, Jennifer; Dee.allen@ldftribe.com
Subject: FW: Fresh look at proposed well locations

Good Morning,

Thank you for providing Bristol's Proposed Well Locations. The comments below are based on all available site data, as put forth in Mr. Arrazola's March 20th letter. We recognize several data

gaps including logged stratigraphy, plume connectivity uncertainty, and several data gap voids. We are looking forward to the call today at 12pm.

Comments on the Bristol's Proposed Well Locations (figure attached):

1: Good for the SW plume margin definition near the lake.

2: Good for the SE plume margin near the lake.

3: OK for interior plume characteristics at the pond, to provide improved resolution of the central plume mass midway between the UST area and the lake. For this purpose, MIP data suggests that for the purpose of plume core, the well should be moved westerly where MIP response is higher. Also of note and to be aware- the existing MW-19 well nest is screened 6.5-16.5 (MIP response below this interval) and 35-40 (the well is screened in between two MIP responses). This well nest includes clay, silty sand, grey clayey silty sand.

4: Good for the monitoring of a potential worst case plume interior location at the lake margin.

5: I'm not sure if the need for an upgradient well is crucial at this time; the proposed location may in fact show total VOCs of 5 to 50 ppb, which negates the well's potential usefulness as a background well.

Additional locations meriting well nests:

1: Near the location of former recovery wells RW-1/RW-4 at the UST basin, where NAPL would most likely be present at high enough transmissivity to enter monitoring well screens.

2: Along the gasoline piping and/or at the former dispenser island, for possible worst case conditions and NAPL presence. This also provides the opportunity to further define the extent of soil contamination in this area. Recalling from the model presentation, a significant data void exists between defined soil source area and the BH17 location. The volumetric calcs provided in the model presentation show that ½ of predicted source soil volume extends from the source area to BH17 within the data void area.

3: Intercepting the plume between the source area and the Kozak's private wells. A private well was impacted in 1998 above ES. Weston's AAA' – A cross-section shows that the MW22 well nest is screened above and below the plume. Groundwater collected from BH1 17 temporary well provided 24,867 ppb total vocs and 115 ppb benzene. Soil samples collected from BH17 are among the dirtiest soil samples collected onsite. Adjacent MIP5 data shows a response around 22-26 feet.

4: We interpret the plume width to be up to 300 feet at the lake margin; with EPA's proposed new wells and the existing wells, there would be a total of four well locations along that 300 foot plume front, and two of those four locations may in fact be at the outer plume margins (E and W at their proposed locations 1 and 2). This would leave just two well nest locations to assess and monitor the plume interior as it migrates beneath the lake, and therefore an additional nest along the lakeshore may be merited to allow better assessment of worst case concentrations at this

most sensitive receptor area of the site.

Drilling Methods

Uncertainty regarding what lithology the well is screened in, potential for drilling and screening through confining units allowing vertical migration, and misplaced screened intervals are concerns to be addressed when considering drilling methods and well construction. We have several options to proposed along these lines.

Kristen Hanson

Environmental Response Program Coordinator

Lac du Flambeau Tribal Natural Resource Department

Office: 715-588-4290

Cell : 715-614-4644

From: Egan, Robert [mailto:egan.robert@epa.gov]
Sent: Tuesday, April 4, 2017 4:10 PM
To: Hanson, Kristen
Cc: Kamke, Sherry; Allen, Dee
Subject: FW: Fresh look at proposed well locations

Kristen,

For your review.

Bob Egan

Corrective Action Manager

Underground Storage Tanks Section

RCRA Branch

EPA Region 5

(312) 886-6212

(312) 692-2911 (fax)

From: Faust, Matt [mailto:mfaust@bristol-companies.com]

Sent: Tuesday, April 04, 2017 3:02 PM

To: Egan, Robert <egan.robert@epa.gov>

Cc: Allen, Bob <ballen@bristol-companies.com>

Subject: Fresh look at proposed well locations

Bob,

Bob Allen and I have taken a fresh look at ideal locations for additional monitoring wells at the Tower site based on the newly updated S2C2 model. Of the following locations, a few are listed as ideally being clusters of 3 wells: one at the water table, one targeting the vertical core of the plume, and one at the bedrock contact. In these situations, I think the deepest (bedrock contact) well is the lowest priority. In addition, our fifth location (an up gradient well) is a lower priority than the other four.

•□□□□□□□ Location 1

- On the shore of Haskell Lake between locations of VAS-11 and VAS-01, near the currently interpreted 10 ug/L total VOC isocontour.
- Approximately 1,990,325 Easting, 272,240 Northing.
- Well cluster of 2-3 wells. Ideally, one at the water table, one at a depth presumed to correspond with the vertical core of the plume (~elevation of 1,530 feet above MSL, based on VAS-11 and MW-16 well cluster), and one at the bedrock contact (lower priority).
- Purpose: to better define the influx into Haskell Lake

•□□□□□□□ Location 2

- On the shore of Haskell Lake between the locations of VAS-02 and VAS-03, near the currently interpreted 10 ug/L total VOC isocontour
- At approximately 1,990,520 Easting, 272,200 Northing.
- Anticipated rig accessibility issues, so install as close as possible to this location.
- Well cluster of 2-3 wells. Ideally, one at the water table, one at a depth presumed to correspond with the vertical core of the plume (~elevation of 1,535 feet above MSL, based on VAS-02), and one at the bedrock contact (lower priority).
- Purpose: to better define the influx into Haskell Lake

•□□□□□□□ Location 3

- West-northwest of the location of BH-30, south of the location of MW-19 well cluster, near the interpreted horizontal core of the plume (where the 300 ug/L total VOC isocontour approaches the shore of the pond)
- At approximately 1,990,540 Easting, 272,320 Northing.
- Cluster of 2-3 wells, Ideally one at the water table, one at a depth to correspond with the vertical core of the plume (~elevation of 1,540 feet above MSL, based on VAS-02 and MW-21 cluster), and one at the bedrock contact (lower priority)
- Purpose: Fill in data gap and refine kriging between two apparent groundwater plums

•□□□□□□□ Location 4

- Between MW-17 well cluster and VAS-02
- At approximately 1,990,450 Easting, 272,300 Northing.
- One well screened at a depth corresponding with the highest concentrations at VAS-02 and MW-16 well cluster (1,530-1,535 feet above MSL)
- Purpose: Filling in data gap between two groundwater plumes AND testing possibility that MW-17D is not screened deep enough to capture the highest dissolved concentrations

•□□□□□□□ Location 5

- On north side of State Highway 70, vicinity of MW-2 or east of MW-2 to be directly up gradient of source area
- At approximately 1,990,700 Easting, 272,550 Northing,
- One well screened at depth, corresponding with deeper source area wells (MW-

20D, MW-21M, MW-21D

- Purpose: Collection of up-gradient, non-impacted, groundwater chemistry data

Matt Faust, P.G.

Project Manager/Geologist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 743-9346
FAX : (907) 563-6713
mfaust@bristol-companies.com
<http://www.bristol-companies.com/>

CONFIDENTIAL NOTICE: This document is for the sole purpose of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure, or distribution is prohibited. If you are not the intended recipient, please contact the sender and destroy all copies of the original document.